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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,743	06/30/2003	Douglas E. Fain	S-92,821	2559
48589	7590	04/17/2006	EXAMINER	
<b>ROBERT POTEAT, P.C.</b> 1092 W. OUTER DRIVE OAK RIDGE, TN 37830				FULLER, ERIC B
		ART UNIT		PAPER NUMBER
				1762

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/611,743	FAIN ET AL.
	Examiner Eric B. Fuller	Art Unit 1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 02 February 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 2-24 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 2-24 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) Notice of Informal Patent Application (PTO-152)  
6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Response to Arguments***

Applicant argues and has a signed declaration that alleges that the coating of Funke is not deposited on the pore walls of membrane. The declaration indicates that this would clog the pores. This has not been found convincing. The object of Funke is to reduce the diameters of the pores of the membrane. Funke indicates that the larger pores allow larger molecules to enter and even teaches that some of the larger pores may be clogged by the coating (column 6, lines 33-64). Just as the reference shows that the coating enters the walls of the gaps formed between crystals (figure 1), any pore large enough to allow the passage of the reactant would also receive some coating within the walls of the pore. These are the naturally occurring pores (defects) that Funke is concerned with eliminating or reducing the diameter of. Therefore, the examiner agrees that for the most part, the coating may be contained on the surface of the membrane. However, at least some coating material would inherently be deposited on the walls of the pores, even if only at small penetration depths, in the pores large enough to allow passage of the reactants. This is sufficient for reading on the claims.

Applicant argues and has a signed declaration that alleges that it would not have been obvious to use a metal oxide as the membrane. This is not found convincing. Funke is explicitly open to other materials besides zeolite comprising the membrane (column 5, lines 55-65). Butler teaches the art recognized suitability of using metal oxide as the membrane. Beyond that, the metal oxide only possesses some of the

defects, but not all, that Funke is concerned with overcoming. Thus, it would have been an obvious benefit to use metal oxide.

The applicant's arguments and declaration have not been found convincing. The rejections of the previous Office Action have been maintained and are duplicated below.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funke et al. (US 6,501,517) in view of Butler et al. (US 4,938,870).

Funke teaches the claimed process is disclosed at col. 4, lines 20-50, col. 4, lines 60-68, col. 7, lines 10-15, 25-30, and 60-65, col. 8, lines 30-45, col. 9, lines 1-3 and 35-50, col. 10, lines 21-55 and col. 11, lines 34-38. It is noted that the pore sizes disclosed in the examples after deposition of the layers are in the claimed ranges. Funke teaches that the membrane may be zeolite or any other inorganic crystalline membrane that has surface hydroxyl groups. Accordingly, Funke is silent in teaching that the membrane is a metal oxide. However, Butler teaches that porous metal oxide membranes are known in the art to have industrial application. From this, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use metal oxide as the ceramic membrane material in Funke. By doing so, one would have a

reasonable expectation of success, as Funke explicitly teaches the art recognized suitability of using other ceramic membranes and Butler teaches the industrial applicability of metal oxide membranes.

As to claims 14 and 15, Funke teaches the limitations of claim 4, as shown above, but does not explicitly disclose coating only one side of the membrane, such as by placing the membrane on a holder. However, because the purpose of the membranes disclosed in the above references is to filter material, which involves passing a medium through the membrane to allow some material to pass through based on the adjusted pore size and such passing through is only usually performed from a single direction through the filter to avoid dislodging trapped material filtered out by the membrane, it would have been obvious to coat only the inflow side of the filter to adjust the pore size thereof because that is the side at which filtration is performed and coating only one side would have the clear advantages of saving process time and cost by coating only one side as opposed to both sides.

Claims 2-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Funke et al. (US 6,051,517) in view of Levy et al. (US 5,789,024).

Funke teaches the limitations above, but does not explicitly disclose a gamma alumina or alumina membrane. However, because Levy discloses that it is desirable to decrease the pore size of alumina membranes by depositing inorganic compounds thereon (col. 7, line 23), it would have been obvious to have coated an alumina membrane by the process of Funke with a reasonable expectation that doing so would

successfully provide an alumina membrane having an adjusted pore size to tailor its filtration properties.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

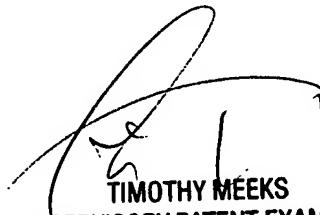
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks, can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



EBF



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